

> E "CHLORENDIC ANHYDRIDE"/CN 25  
E1 1 CHLORENDIC ACID-TETRACHLOROBISPHENOL A BIS(2-HYDROXYETHYL) ETHER  
COPOLYMER/CN  
E2 1 CHLORENDIC ACID-TRIMETHYLOLPROPANE POLYMER/CN  
E3 1 --> CHLORENDIC ANHYDRIDE/CN  
E4 1 CHLORENDIC ANHYDRIDE-2-HYDROXYETHYL  
METHACRYLATE-TRIMETHYLOLPROPANE TRIACRYLATE COPOLYMER/CN  
E5 1 CHLORENDIC ANHYDRIDE-DIBROMONEOPENTYL GLYCOL-MALEIC  
ANHYDRIDE-NEOPENTYL GLYCOL POLYMER/CN  
E6 1 CHLORENDIC ANHYDRIDE-DIETHYLENE GLYCOL DIACRYLATE-ETHYLENE  
GLYCOL-MALEIC ANHYDRIDE POLYMER/CN  
E7 1 CHLORENDIC ANHYDRIDE-DIETHYLENE GLYCOL-ETHYLENE GLYCOL-MALEIC  
ANHYDRIDE COPOLYMER/CN  
E8 1 CHLORENDIC ANHYDRIDE-DIETHYLENE GLYCOL-ETHYLENE GLYCOL-MALEIC  
ANHYDRIDE POLYMER/CN  
E9 1 CHLORENDIC ANHYDRIDE-DIETHYLENE GLYCOL-FUMARIC ACID POLYMER/CN  
E10 1 CHLORENDIC ANHYDRIDE-DIETHYLENE GLYCOL-MALEIC ANHYDRIDE  
POLYMER/CN  
E11 1 CHLORENDIC ANHYDRIDE-DIETHYLENE GLYCOL-TETRACHLOROPHTHALIC  
ANHYDRIDE-TRIETHYLENE GLYCOL COPOLYMER/CN  
E12 1 CHLORENDIC ANHYDRIDE-DIPENTAERYTHRITOL  
PENTAACRYLATE-TRIMETHYLOLPROPANE TRIACRYLATE COPOLYMER/CN  
E13 1 CHLORENDIC ANHYDRIDE-EPICHLOROHYDRIN-MALEIC ANHYDRIDE-PROPYLENE  
GLYCOL COPOLYMER/CN  
E14 1 CHLORENDIC ANHYDRIDE-EPICHLOROHYDRIN-MALEIC ANHYDRIDE-PROPYLENE  
GLYCOL POLYMER/CN  
E15 1 CHLORENDIC ANHYDRIDE-EPO TOHTO YDPN 601-1,6-HEXANEDIOL  
DIACRYLATE COPOLYMER ACRYLATE/CN  
E16 1 CHLORENDIC ANHYDRIDE-ETHANOLAMINE-FUMARIC  
ACID-METHYLTETRAHYDROPHthalic ACID-PROPYLENE GLYCOL COPOLYMER/CN  
E17 1 CHLORENDIC ANHYDRIDE-ETHYLENE GLYCOL COPOLYMER/CN  
E18 1 CHLORENDIC ANHYDRIDE-ETHYLENE GLYCOL POLYMER/CN  
E19 1 CHLORENDIC ANHYDRIDE-ETHYLENE GLYCOL-GLYCEROL MONOALLYL ETHER  
COPOLYMER/CN  
E20 1 CHLORENDIC ANHYDRIDE-ETHYLENE GLYCOL-GLYCEROL MONOALLYL  
ETHER-METHYLPHOSPHONIC DICHLORIDE COPOLYMER/CN  
E21 1 CHLORENDIC ANHYDRIDE-ETHYLENE GLYCOL-MALEIC ANHYDRIDE  
COPOLYMER/CN  
E22 1 CHLORENDIC ANHYDRIDE-ETHYLENE GLYCOL-MALEIC ANHYDRIDE POLYMER/CN  
E23 1 CHLORENDIC ANHYDRIDE-ETHYLENE GLYCOL-MALEIC  
ANHYDRIDE-TRIETHYLENE GLYCOL DIMETHACRYLATE POLYMER/CN  
E24 1 CHLORENDIC ANHYDRIDE-ETHYLENE GLYCOL-TETRACHLOROPHTHALIC  
ANHYDRIDE COPOLYMER/CN  
E25 1 CHLORENDIC ANHYDRIDE-ETHYLENIMINE COPOLYMER/CN

=> S E3

L1 1 "CHLORENDIC ANHYDRIDE"/CN

=> d 11

L1 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2006 ACS on STN

RN 115-27-5 REGISTRY

ED Entered STN: 16 Nov 1984

CN 4,7-Methanoisobenzofuran-1,3-dione, 4,5,6,7,8,8-hexachloro-3a,4,7,7a-  
tetrahydro- (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN 5-Norbornene-2,3-dicarboxylic anhydride, 1,4,5,6,7,7-hexachloro- (6CI,  
8CI)

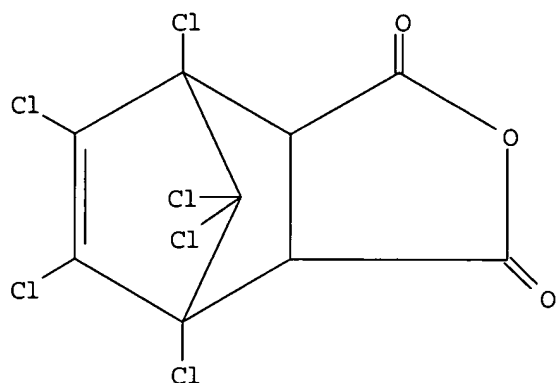
CN Bicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic anhydride, 1,4,5,6,7,7-  
hexachloro- (5CI)

OTHER NAMES:

CN 1,4,5,6,7,7-Hexachloro-5-bicyclo[2.2.1]heptene-2,3-dicarboxylic anhydride

CN 1,4,5,6,7,7-Hexachloro-5-norbornene-2,3-dicarboxylic anhydride

CN 1,4,5,6,7,7-Hexachlorobicyclo[2.2.1]-5-heptene-2,3-dicarboxylic acid anhydride  
 CN 1,4,5,6,7,7-Hexachlorobicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic anhydride  
 CN 2,3-Dicarboxy-1,4,5,6,7,7-hexachlorobicyclo[2.2.1]hept-5-ene anhydride  
 CN 3,4,5,6,7,7-Hexachloro-1,2,3,6-tetrahydro-3,6-endo-methylenephthalic anhydride  
 CN Bicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic acid, 1,4,5,6,7,7-hexachloro-, anhydride  
 CN Chloran 542  
 CN **Chlorendic anhydride**  
 CN endo-1,4,5,6,7,7-Hexachloro-1,2,3,4-tetrahydro-5-norbornene-2,3-dicarboxylic acid anhydride  
 CN HET Anhydride  
 CN Hexachloro-5-norbornene-2,3-dicarboxylic anhydride  
 CN Hexachloroendomethylene tetrahydrophthalic anhydride  
 CN Kayahard CLA  
 CN NSC 22229  
 FS 3D CONCORD  
 DR 122485-51-2  
 MF C9 H2 Cl6 O3  
 CI COM  
 LC STN Files: ANABSTR, BEILSTEIN\*, BIOSIS, CA, CAOLD, CAPLUS, CASREACT, CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN, CSChem, CSNB, HSDB\*, IFICDB, IFIPAT, IFIUDB, MRCK\*, MSDS-OHS, PROMT, RTECS\*, SPECINFO, TOXCENTER, ULIDAT, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



**\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\***

387 REFERENCES IN FILE CA (1907 TO DATE)  
 53 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 387 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
 72 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> file caplus

COST IN U.S. DOLLARS

SINCE FILE  
ENTRY

TOTAL  
SESSION

FULL ESTIMATED COST

8.42

8.63

FILE 'CAPLUS' ENTERED AT 07:55:50 ON 15 FEB 2006

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 15 Feb 2006 VOL 144 ISS 8  
FILE LAST UPDATED: 14 Feb 2006 (20060214/ED)

Effective October 17, 2005, revised CAS Information Use Policies apply. They are available for your review at:

<http://www.cas.org/infopolicy.html>

=> s 122485-51-2(p)(maleic(n)anhydride)(p)(hexachlorocyclopentadiene)  
**REGISTRY INITIATED**  
Substance data SEARCH and crossover from CAS REGISTRY in progress...  
Use DISPLAY HITSTR (or FHITSTR) to directly view retrieved structures.

L3 387 L2

UNMATCHED LEFT PARENTHESIS 'P)(HEXACHLORO'  
COMMAND STACK INTERRUPTED. ENTER "DISPLAY HISTORY"  
TO SEE WHICH COMMANDS WERE EXECUTED.

The number of right parentheses in a query must be equal to the number of left parentheses.

=> s 122485-51-2(p)(maleic(n)anhydride)(p)(hexachlorocyclopentadiene)  
**REGISTRY INITIATED**  
Substance data SEARCH and crossover from CAS REGISTRY in progress...  
Use DISPLAY HITSTR (or FHITSTR) to directly view retrieved structures.

L5 387 L4

95255 MALEIC  
2 MALEICS  
95255 MALEIC  
(MALEIC OR MALEICS)  
201710 ANHYDRIDE  
31973 ANHYDRIDES  
211993 ANHYDRIDE  
(ANHYDRIDE OR ANHYDRIDES)  
1903 HEXACHLOROCYCLOPENTADIENE

17 HEXACHLOROCYCLOPENTADIENES  
 1905 HEXACHLOROCYCLOPENTADIENE  
 (HEXACHLOROCYCLOPENTADIENE OR HEXACHLOROCYCLOPENTADIENES)  
 L6 10 L5 (P) (MALEIC (A) ANHYDRIDE) (P) (HEXACHLOROCYCLOPENTADIENE)

=> d 16 1-10

L6 ANSWER 1 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN  
 AN 1987:33570 CAPLUS  
 DN 106:33570  
 TI Investigation of the chlorine balance in the degradation of a HET-acid  
 based unsaturated polyester: Part II. The chlorinated organic compounds  
 AU Irzl, G. H.; Vijayakumar, C. T.; Fink, J. K.; Lederer, K.  
 CS Inst. Chem. Phys. Technol. Kunststoffe, Montanuniv. Leoben, Leoben,  
 A-8700, Austria  
 SO Polymer Degradation and Stability (1986), 16(1), 73-78  
 CODEN: PDSTDW; ISSN: 0141-3910  
 DT Journal  
 LA English

L6 ANSWER 2 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN  
 AN 1987:33569 CAPLUS  
 DN 106:33569  
 TI Pyrolysis studies on an unsaturated polyester based on HET-acid, maleic  
 anhydride and 1,2-propanediol: qualitative analysis of the products of  
 degradation and mechanistic aspects  
 AU Irzl, G. H.; Vijayakumar, C. T.; Fink, J. K.; Lederer, K.  
 CS Inst. Chem. Phys. Technol. Kunststoffe, Montanuniv. Leoben, Leoben,  
 A-8700, Austria  
 SO Polymer Degradation and Stability (1986), 16(1), 53-71  
 CODEN: PDSTDW; ISSN: 0141-3910  
 DT Journal  
 LA English

L6 ANSWER 3 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN  
 AN 1981:588073 CAPLUS  
 DN 95:188073  
 TI Preparation of polyesters from Diels-Alder adducts  
 IN Moore, Richard Anthony; Levis, William Walter  
 PA BASF Wyandotte Corp., USA  
 SO Brit. UK Pat. Appl., 6 pp.  
 CODEN: BAXXDU  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	GB 2061300	A	19810513	GB 1980-28598	19800904
PRAI	US 1979-72620	A	19790905		

L6 ANSWER 4 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN  
 AN 1976:478934 CAPLUS  
 DN 85:78934  
 TI Polyester modifiers for vinyl halide polymers  
 IN Takahashi, Akio; Smith, Geoffrey H.; Hopkins, George C.  
 PA Hooker Chemicals and Plastics Corp., USA  
 SO U.S., 10 pp.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
--	------------	------	------	-----------------	------

PI	US 3956422	A	19760511	US 1975-545942	19750131
	JP 51090344	A2	19760807	JP 1975-91510	19750725
	FR 2299373	A1	19760827	FR 1975-23620	19750729
	FR 2299373	B1	19781020		
	DE 2535954	A1	19760805	DE 1975-2535954	19750812
	US 4155951	A	19790522	US 1976-662622	19760301
	US 4206291	A	19800603	US 1979-19974	19790312
PRAI	US 1974-491190	A2	19740724		
	US 1975-545942	A	19750131		
	US 1976-662622	A3	19760301		

L6 ANSWER 5 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1975:171676 CAPLUS

DN 82:171676

TI Chlorendic anhydride

IN Cull, Jay A.; Zimberg, Walter M.

PA Hooker Chemicals and Plastics Corp., USA

SO U.S., 4 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3868397	A	19750225	US 1972-249036	19720501
PRAI	US 1972-249036	A	19720501		

L6 ANSWER 6 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1974:553460 CAPLUS

DN 81:153460

TI 1,4,5,6,7,7-Hexachlorobicyclo[2.2.1]-5-heptene-2,3-dicarboxylic acid anhydride

IN Miyaki, Shoichi; Sagayama, Seiji

PA Nippon Kayaku Co., Ltd.

SO Jpn. Tokkyo Koho, 2 pp.

CODEN: JAXXAD

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 49009461	B4	19740305	JP 1970-65429	19700728
PRAI	JP 1970-65429	A	19700728		

L6 ANSWER 7 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1974:464491 CAPLUS

DN 81:64491

TI Chlorinated anhydrides as curing agents of epoxy resins

AU Salakhov, M. S.; Guseinov, M. M.; Treivus, E. M.; Gasanov, G. M.

CS USSR

SO Plasticheskie Massy (1973), (6), 26-8

CODEN: PLMSAI; ISSN: 0554-2901

DT Journal

LA Russian

L6 ANSWER 8 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1974:134110 CAPLUS

DN 80:134110

TI Improving chlorendic anhydride production

AU Antonov, L. T.; Simonov, V. D.

CS USSR

SO Khimicheskaya Promyshlennost (Moscow, Russian Federation) (1973), 49(11),

826-8

CODEN: KPRMAW; ISSN: 0023-110X

DT Journal  
LA Russian

L6 ANSWER 9 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN  
AN 1973:406200 CAPLUS  
DN 79:6200  
TI Unsaturated chlorendic polyester resins  
IN Zimberg, Walter M.; Schulz, Arthur C.; Woehr, George C.  
PA Hooker Chemical Corp.  
SO Ger. Offen., 21 pp.  
CODEN: GWXXBX

DT Patent  
LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	DE 2245628	A1	19730329	DE 1972-2245628	19720916
	US 3787369	A	19740122	US 1971-182178	19710920
	ZA 7205851	A	19730530	ZA 1972-5851	19720825
	AU 7246028	A1	19740307	AU 1972-46028	19720828
	GB 1378916	A	19741227	GB 1972-40660	19720901
	IT 967184	A	19740228	IT 1972-28860	19720906
	BE 788618	A1	19730308	BE 1972-121860	19720908
	CA 986641	A1	19760330	CA 1972-151440	19720911
	FR 2153279	A1	19730504	FR 1972-32966	19720918
	FR 2153279	B1	19790615		
	JP 48040894	A2	19730615	JP 1972-94044	19720919
	ES 406845	A1	19760516	ES 1972-406845	19720919
	NL 7212736	A	19730322	NL 1972-12736	19720920
	CH 579604	A	19760915	CH 1972-13765	19720920
PRAI	US 1971-182178	A	19710920		

L6 ANSWER 10 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN  
AN 1973:406099 CAPLUS  
DN 79:6099  
TI Unsaturated polyesters  
IN Rushton, Brian M.; Rosenfeld, Jerold C.; Hindersinn, Raymond R.  
PA Hooker Chemical Corp.  
SO Ger. Offen., 19 pp.  
CODEN: GWXXBX

DT Patent  
LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	DE 2240251	A1	19730222	DE 1972-2240251	19720816
	US 3772406	A	19731113	US 1971-172595	19710817
	AU 7244973	A1	19740131	AU 1972-44973	19720726
	IT 963548	A	19740121	IT 1972-27650	19720729
	NL 7211130	A	19730220	NL 1972-11130	19720815
	BR 7205561	A0	19730710	BR 1972-5561	19720815
	GB 1386639	A	19750312	GB 1972-38251	19720816
	BE 787641	A1	19730219	BE 1972-121026	19720817
	FR 2149526	A1	19730330	FR 1972-29487	19720817
	JP 48029897	A2	19730420	JP 1972-82439	19720817
	JP 52022994	B4	19770621		
PRAI	US 1971-172595	A	19710817		

=> d 16 8-9 abs

L6 ANSWER 8 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN

AB The process for the manufacture of chlorendic anhydride (I) [115-27-5] by the Diels-Alder condensation of **hexachlorocyclopentadiene** [77-47-4] with **maleic anhydride** [108-31-6] was improved by carrying out the reaction in chlorobenzene [108-90-7] and precipitating I by addition of straight-run naphtha (b. 62-85.deg.). The temperature dependence of the solubility of I was determined in the two solvents and in their 1:4 mixture The I drying step was also examined in detail.

L6 ANSWER 9 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN

AB Fire-resistant title resin compns. of low corrosiveness were prepared by Diels-Alder reaction of excess **maleic anhydride** (I) with **hexachlorocyclopentadiene** (II) to give chlorendic anhydride [115-27-5] at 130-60.deg., (catalytic) reaction with HOCH<sub>2</sub>CH<sub>2</sub>OH (III) with steam distillation before the acid number decreased to .sim. 40 for volatile component removal, polymerization at 150-61.deg., and addition of styrene [100-42-5]. Thus, 117 parts molten I was added to 200 parts II within 2 hr at 130.deg. and the mixture heated 4 hr at 144.deg.. Addition of 82 parts III within 1 hr at 137-67.deg. under N, heating 4 hr at 161.deg., steam distillation for 4 hr at 155-61.deg., and heating 10.5 hr at 150-60.deg. under N gave chlorendic anhydride-ethylene glycol copolymer (IV) [40620-96-0]. A composition containing 200 parts IV, 80 parts styrene, and 0.01% toluhydroquinone had corrosiveness (NACE Standard Test TM-01-06) to carbon steel 0.08 mils/year and peak exotherm 193.deg. vs. 4.71 mils/year and 173.deg. for a resin prepared without H<sub>2</sub>O vapor distillation

AB 1,4,5,6,7,7-Hexachlorobicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic acid anhydride (I) [115-27-5], useful in preparing thermosetting epoxy resins or polyesters, was prepared in >99.4% purity with high yields by treating **hexachlorocyclopentadiene** [77-47-4] with **maleic anhydride** [108-31-6] in a mixed solvent of saturated or unsatd. chloro-substituted hydrocarbon and benzene or alkylbenzene (5-50%) at 110-70.deg., and washing the I precipitate with the mixed solvent, which gave better results than either solvent alone.